CLAIMS

1. A multislit type actuator characterized by comprising a plurality of piezoelectric actuators aligned and allocated in comb teeth formed on a substrate, wherein a condition of crystal grains in side surfaces of the piezoelectric actuators forming wall surfaces of a slit between the comb teeth is that the crystal grains under transgranular fracture are 1% or below.

2. The multislit type actuator according to claim 1, wherein an amount of convexo-concave in the wall surfaces of the slit is 10 μm or less.

3. The multislit type actuator according to claim 1, wherein a surface roughness Rt of the wall surfaces of the slit is 10 μm or less.

4. The multislit type actuator according to any one of claims 1 to 3, wherein a slit width between the comb teeth is varied from a back to a tip end of the comb teeth.

5. The multislit type actuator according to any one of claims 1 to 4 having slits of at least two kinds of width, wherein the slit width between each of the comb teeth is not the same.

6. The multislit type actuator according to any one of claims 1 to 5, wherein a minimum slit width is less than 70 μm.

7. An inkjet head driven by a shear mode, wherein a top of the actuator opposing to the substrate of the multislit type actuator according to any one of claims 1 to 6 is closed by a closing plate, and the slit is formed as an ink chamber to allow ink to be discharged in a direction of the tip of comb teeth.

8. An inkjet head driven by a shear mode, wherein side surfaces of two multislit type actuators according to any one of claims 1 to 6 are joined so as to align with comb tooth parts each other, and slit portions formed in a chamber shape as ink chambers to allow ink to be discharged in a tip direction of the comb teeth.

9. A method for manufacturing a multislit type actuator having a plurality of actuators each of which comprising a piezoelectric material are aligned and allocated on a substrate in comb teeth, comprising:

a first process in which a plurality of piezoelectric material green sheets are prepared, and slit apertures are formed on a first piezoelectric material green sheet among the above

plural piezoelectric material green sheets by use of a punch and a die;

a second process in which the above first piezoelectric material green sheet is pulled up by use of a stripper;

a third process in which a top portion of the above punch is pulled up to the extent that it is pulled in slightly from the lowest portion of the above pulled up first piezoelectric material green sheet;

a fourth process in which second slit apertures are formed into in a second piezoelectric material green sheet by the above punch;

a fifth process in which the above second piezoelectric material green sheet is pulled up jointly with the above first piezoelectric material green sheet;

a sixth process in which the top portion of the above punch is pulled up to the extent that it is pulled in slightly from the lowest portion of the above pulled up second piezoelectric material green sheet;

a seventh process in which hereafter a plurality of the piezoelectric material green sheets being laminated by repeating from the fourth process to the sixth process to form a plurality of piezoelectric layers of comb teeth shape; and

an eighth process in which the piezoelectric layers are fired so that one side surface of the piezoelectric layers is brought into close contact with a substrate.